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THE Northwest Regional Educational Laboratory

PROGRAM REPORT

A Study of Distance Education Policies
in State Education Agencies

Developed for the

United States Congress
Office of Technology Assessment

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A Study of Distance Education Policies in State Education Agencies

I. Introduction

A. Distance Education: A Definition

New curriculum requirements, rising costs for educational services, shortages of qualified teachers, and sparse student enrollment in some subjects and locations all contribute to increasing demands for additional cost-effective methods for providing instruction to the nation's students. At the same time, advances in telecommunications and computer technology make it possible to provide teachers and courses to students via technology, without regard to geography or the traditional limitations of the local school.

The techniques for delivering instruction when the teacher and the students are not face-to-face are usually categorized as distance education or distance learning. The earliest form, still used widely around the world, is the correspondence course. This approach has been supplemented by the use of two-way radio and telephone. The newer technologies of television, computers, and telecommunications offer many opportunities for enriching and improving the delivery of distance education. We find that in most cases now, when people speak of distance education, they are thinking of a technology-based approach. Furthermore, it is the introduction of the new technologies which is driving the

concern about state policies, because the use of them begins to involve more agencies and generate more issues than the correspondence methods. Interaction with the teacher through live television and telephone approximates classroom interaction, and hence raises issues about the preparation of the teacher and other rules about the classroom. Public and private television agencies, universities, telecommunications companies and regulators, and others begin to have an interest. Federal and regional agencies begin to have an interest because of transborder concerns. Because of these developments, and the trend toward increased use of various combinations of technologies, our focus in this paper is on a definition of distance education which assumes a use of a modern telecommunications and/or computer system. This focus does not exclude correspondence materials as a component.

For the purposes of this study, then, we define distance education to be a system of instruction in which the teacher and student are not face-to-face, and the communication between them is facilitated by one-way or two-way telecommunications or computer technology. In this definition, we consider that the amount of physical distance could be very small (within the same building) or very large (intercontinental).

Examples of delivery technologies in common use are categorized below by primary form of presentation:

Audio: audiotape, phonograph, radio, telephone

Video: full broadcast, ITFS, cable, microwave, satellite, videotape, videodisc, slow scan television

Computer: electronic mail, computer conferencing, audiographics

Some examples of actual functioning systems may assist understanding of the concept. Probably the most commonly known type of system is composed of a teacher in a television studio conducting lecture, demonstration and discussion activities which are transmitted by satellite to schools or receiving sites where students are grouped. The video is commonly one-way, and a portion of each class session is supplemented by a telephone link between the teacher and all receiving sites. Several organizations provide courses in this manner by contract to any school district in the nation. They include a Texas company called TI-IN, the Oklahoma State University in Stillwater, and the STEP cooperative of Educational Service District 101 in Spokane, Washington. In North Carolina, a planned state-wide implementation of the TI-IN System has taken place.

The EDUNET organization in Helena, Montana, employs a large microcomputer to provide course material development and presentation, test development and administration, and an electronic message system. Subscribing schools use a

microcomputer, modems and the regular telephone system to communicate with the center. It operates much like a correspondence system, in which teachers develop the assignment directions, worksheets and tests on the computer, and students retrieve them from there. Tests are taken directly on-line, and student-teacher communication is primarily by electronic messages, supplemented occasionally by direct telephone discussion. Some EDUNET teachers use video tape or audio tape in their course design.

A third type of delivery system is audiographics, which makes use of a speakerphone and a microcomputer with graphics tablet and modem at the teacher's site and each student location, and a telephone connection between them. Anything written by the students or the teacher on the tablets is displayed on the other screens in the system. The class is conducted live, with all students hearing the teacher and being able to participate in discussions. Thus, remote students interact with the teacher and other students in almost every way except they cannot see each other. Examples of the use of audiographics exist in schools in Pennsylvania, New York, Colorado, Washington, and others.

Two-way interactive video and audio requires video cameras and transmission equipment at both the teacher and student locations. The teacher's site also sometimes is equipped with additional cameras and a switch to display the teacher, diagrams on a table, or a film or tape. The audio and video

signals can be carried by video cable, fiber optics, microwave or other means. Major experiments with this type of system have been conducted in Minnesota by cooperative groups of school districts supported in part with funding from the State Department of Education.

One problem in defining the limits of this study is that some states are developing their long-range plans and policy statements in terms of the general field of educational technology, while others deal with distance education as an entity. Technology-based distance education as illustrated in the previous examples usually makes use of a variety of educational technologies. It is therefore useful to differentiate between educational technology as a collection of devices, media and techniques which can be used for instruction, and distance education as a system of instruction which makes use of one or more educational technologies. The Texas state plan is an example of one which recognizes the difference, dealing with distance education as a concept of delivering instruction via technology and providing for its special implications within a broader plan for technology in education.

As the number of projects using technology for distance learning expands, important issues are raised regarding State educational policies and regulations. In shaping or regulating educational activities, states play a role in the development of distance learning solutions to educational

needs. While responsibility for instruction resides principally with state and local agencies, distance learning projects often cross these boundaries and raise questions of concern to all policymakers.

The purpose of this study is to identify the current status of state policies regarding distance education in a sample of states, and identify changes in federal, state, and local roles in developing policies that may encourage more efficient and effective use of technology for distance learning. The study will identify and analyze policies in key areas which are now, or are likely in the future, to inhibit the use of distance education techniques by school districts in attempting to solve instructional problems. Such areas include certification, training, evaluation, planning, and funding. This study will contribute to the broader study of technologies for learning at a distance being conducted by the Office of Technology Assessment.

B. The State Role

What is state policy in distance education? Our assumption at the beginning of this study was that the SEA is the primary agency for establishing policy in distance education, and that policy would be reflected in SEA and state board guidelines, rules or other statements. After all, policy has been relatively easy to identify in the last few years when dealing with computers in instruction. In many cases, there is an SEA staff member responsible for computer issues, and many of

those have become Technology Coordinators as the importance of a broader view has become apparent. However, the importance of remembering the difference between a computer as a technology with many instructional implications, and distance education as a concept of instruction involving a complex interaction of technologies, people, and processes became quickly apparent.

It seems that when educational technology could be addressed in terms of specific media or devices such as films or computers which are used in classrooms by teachers for specific instructional advantage, policy formation resided in the SEA. However, distance education encompasses a variety of technologies which can be used in various combinations, and has implications for regulatory agencies and others outside the SEA. There are a number of agencies of state government and educational institutions other than the department of education which are involved in the formation of policy regarding television and telecommunications. In some states, California and Oregon, for example, even the area of certification of teachers is not within the purview of the state education agency. In others, such as Montana, the formation of educational policy resides in the Office of the State Board of Education, not in the Department of Education.

There are few simple statements of policy in any state which provide a complete picture, and rarely a single agency or staff position which carries comprehensive responsibility or

point of view. Policy may emanate from the public television organization, the state agency regulating telecommunications, the state university system, the teacher certification agency, or the SEA. State policy is most likely a combination of two or more of these.

We find, then, that in order to examine state policy in distance education, we must define policy as the approach of a state as an entity, an aggregate of legislation and the statements of responsible agencies and organizations.

Our review of the various state efforts has revealed a diverse range of policy roles which state education agencies are playing in fostering greater use of distance education. As can be seen from the policy examples elsewhere in this paper, some topics are clearly and consistently the purview of the state. These are certification of professional education personnel, equity of education, funding of education, quality of education, and organizational structure of education. In the areas of certification, television, and telecommunications, such policies may be the responsibility of sections of state government other than the Department of Education.

For the local district, the areas of budget, personnel and student management, instruction, construction and use of facilities, teacher assignment, teacher evaluation, and the

selection of curriculum materials are paramount. There are a number of areas, however, in which the locus of responsibility varies, including evaluation of curriculum and instruction and assignment of credit.

States are thus seen to be key players in furthering the use of distance education for two major reasons: first, they have legal responsibilities to carry out in regard to specific aspects of education, and second, they are the governmental level at which cooperation or collaboration is most feasible between agencies which deal with the various components of distance delivery.

In several of the states, it appears that the state education department is "getting its act together" by developing an agency plan. In these cases it is difficult at this stage to describe the substance of policy direction. For, indeed, the apparent purpose of the planning effort is to define this policy direction. However, we note a curious lack of attention to the specific and unique demands of distance education upon existing policy. There appears to be an assumption that distance education technologies can be treated in the same manner as computer technology in the planning process. This assumption ignores the unique impacts of distance education on areas such as teacher certification, curriculum content, etc.

We also find a range of assumptions about the state's role. In some states the role is clearly limited to dissemination of information and technical assistance. Where this is the case, we find an assumption that much of the policy decision making should be left to the local level. Minimal state attention is given to issues such as certification and quality of content. In other states, such as Maryland, we find a more assertive state direction-setting role, specifying quality standards, and developing new instructional materials, etc.

With few exceptions we find that the focus of the state planning and policy development is very much "inner"-directed on the formal public education sector. Issues of cross-agency collaboration and coordination are rarely addressed, at least in our documents. Our experience would indicate that such issues are paramount in the development of effective distance learning initiatives. Hawaii provided us with the best major example of such a focus.

While all of the states we examined may be regarded as proactive (in that they have launched planning efforts), the level of proactivity varies widely. In some cases, it is obvious that the planning effort is designed to stimulate local districts' attention to the potential of technology applications. In other cases, the nature of the state proactivity goes beyond the "bully pulpit" approach to one of direct support for local demonstration projects such as seen in Minnesota. A third level of proactive stance can be found

in states such as Maryland, in which development of quality standards and new materials and approaches occurs at the state level. Which approach a state takes is very much driven by its historic position on state/local control, attitudes toward research and development support, etc.

Our sampling of states reveals a diversity of initiating roles as states set distance education policy. In some states, such as Minnesota, the Department of Education developed a comprehensive legislative program and recommended the program to the legislature. Upon passage, the Department then assumed the leadership and management of the state strategy (funding local demonstration efforts, disseminating information, etc.) In other states, such as Maryland and New Jersey, we find the Department of Education initiating an agency-wide planning process with little, if any, attention to legislative action. As the planning process proceeds, legislation may emerge, but legislative action does not appear to be a necessary cornerstone of the state effort.

Another mode is found in the case of Hawaii. In this case, a series of separate pieces of legislation leads the state to attempt to put together a comprehensive framework and fill gaps. The result is a comprehensive plan which refines, extends, and coordinates the previous "bits and pieces."

A final mode is found in Texas where the legislature mandated the state education agency to develop a comprehensive state-wide plan.

At this stage, it is difficult to determine the relative effects of these optional pathways to comprehensive distance education policy. However, it would appear that the state public policy "vision" regarding distance education is most clear when there is some interaction between legislative and state education agency initiatives. Further, support for any significant experimentation would seem to require a similar form of interaction between the legislature and the state education agency.

II. An Overview of Selected Policies

A. Summary of Operative Policies

As indicated in part I, we found that state policy in distance education comes from a variety of sources, depending on the differing patterns of responsibility from state to state. We were looking first for policy documents from the state education agencies (SEA). We found that in many cases, such comprehensive documents did not exist, but that there were legislative passages, memoranda or other statements reflecting policy. Sometimes the picture of a state approach required contacting several people in several agencies. In a number of cases, a state plan for technology and/or distance education from the SEA or a state telecommunications plan from another agency provided both policy and approach. As a result, as noted previously, we are treating policy in this paper as the general state position on distance education as reflected in the various sources. The pattern of sources is indicated in Table I.

In addition to the state agency sources, we contacted the major interstate providers of distance education by telephone or personal interview to obtain their perceptions of policy based on their interaction with states. These included TI-IN, Oklahoma State University, STEP, and EDUNET. We also were led to contact six of the regional accrediting agencies which deal with the secondary schools in each state. The providers and the accrediting agencies are certainly affected by the policy

decisions of the states and have points of view based on extensive experience across many states that ought to be considered in any national deliberations on issues in this field.

Having conducted this study, discovering the variety of sources and processes for policy and the variety of points of view on the definition and focus of distance education, we are intrigued by the complexity. The experience would cause us to carry out the study differently if done again, and we wish there were time to do an exhaustive analysis of all the states. Yet we believe we were provided sufficient information to make observations which will be useful to those in state, federal or private agencies who need to think about these issues.

Table I

Source of State Positions
on Distance Education

	Legislation	Policy Document	Tech. Plan	Dist. Ed. Plan	Telecomm. Plan
Florida	X				
Hawaii			X	X	
Idaho		X			
Indiana					X
Iowa	X			X	X
Kentucky	X				X
Maryland			X		
Minnesota	X	X			
Missouri	X				
Montana		X			
Nebraska	X				
New Jersey			X		
New York			X		X
North Carolina	X				
Oklahoma		X			
Oregon	X	X			X
South Carolina					X
Texas		X	X		
Washington					X
West Virginia		X			
Wisconsin			X		

A review of policy statements from various sources noted in Table I has provided a categorization which will allow us to identify issues within a convenient framework for discussion. In each category, the statements included as examples were taken from only two of the source categories in the table, legislation and SEA policy documents. The examples are identified by the state of origin, and are not intended to be an exhaustive list of such statements. Rather, they are a short list to provide a picture of the range, type, style, and approach of such statements. They were not chosen from any perception of quality.

Philosophy

In many states, a major concern of legislators, educators and various special interest groups is that all individuals have access to education. There are inequities in facilities, curriculum offerings, instruction and materials. These arise from factors of prejudice, school size, distance, and funding structure. Two subdivisions of this general area are first, the concern that all students should have access to technology as a learning tool and as subject matter, and second, that technology is a means of delivering educational opportunities to redress inequities. In total, the illustrative statements below legitimize and encourage the use of technology in instruction in a state, set the direction, and define agency roles.

It is the continuing intent of the General Assembly that every child in the State's public school system shall have equal access to educational opportunities, no matter where the child lives or how small the school which the child attends. It is the further intent of the Assembly to encourage and subsidize State-of-the-Art technology as an efficient and cost-effective means of making equal access to opportunity available to all children. (NC)

It is the intent of the General Assembly that the Distance Learning by Satellite program shall be an ongoing component of the public school system and that operational funds for the program shall be included in future continuation budgets. (NC)

The School District shall use its best efforts to integrate current and appropriate technology into each curricular area as a supplemental tool for instruction and for delivering and accessing information. "Technology" includes but is not limited to computer systems, databases, electronic and other media resources, and telecommunications. (MT)

Distance learning, or instruction which takes place when the learner is distant from the instructor and/or the instructional materials, may be used as part of the instructional program. (MT)

It is the policy of the state to use computers and related technology to make instruction and learning more effective and efficient, to make educational programs more relevant to contemporary society, and to reduce the paperwork and data collection requirements placed on classroom teachers. (FL)

It is hereby declared to be the public policy of the state to provide through educational television and radio the powers of teaching, raising living and educational standards of the citizens and residents of the state, and protecting and promoting public interest in educational television and radio in accordance with existing state and federal laws. (FL)

Each school district is encouraged to develop and adopt as part of its educational policy a written technology utilization plan, in consultation with the Curriculum Advisory Committee for Planning, Evaluation and Reporting, appointed pursuant to section 123.741, subdivision 3. The district is encouraged to review the plan each year and adopt revisions as desired. Each school district which intends to prepare and submit a technology utilization plan that complies with this section is eligible to receive state aid. (MN)

The Board of Trustees (of a local district) shall not use technology as an alternative to on-site classroom instruction when a certified teacher, appropriately endorsed, may be hired for the purpose. (MT)

Certification

This is a prominent issue area in distance education. There are two major concerns. The first is for the certification of a teacher from the site of origin, as for example the televised teacher in the case of a satellite-delivered course. Especially in situations where the originating site is in a different state from the receiving site, the receiving state has an interest in the certifiability of the teacher by its rules.

The second concern is for the person, if any, who is responsible for the students at a receiving site. The person is variously referred to as coordinator, monitor or facilitator. This is a complex issue because it can be related to the question of teacher replacement, and to the reasons for choosing a distance education approach. A state may insist that a district assign an on-site monitor who is certified in the subject being delivered, but if such a person is available, then why do they need the distance course? Some states require a teacher as monitor, but not certified in the subject. Some states allow noncertified personnel (aides) to be monitors after special training. In some cases, they are required to be supervised by certified staff. Each of the

major organizations delivering televised instruction by satellite is now specifying the characteristics it believes necessary for an on-site monitor for courses it produces, and none includes certification as a requirement. The following are example statements from several states reflecting the range of approaches.

> A Teacher must hold a teaching certificate valid in the state where the program originates and must meet the minimum academic requirements of the Northwest Accrediting Association. (ID)

> The receiving site shall employ an adult to supervise and monitor students enrolled in the distance learning class. This person may be a paraprofessional, although it is recommended that such a person be a certificated professional. (ID)

> Each satellite class shall have an appropriate certified teacher in the classroom. (OK)

> Each electronically delivered course will be under the direct supervision of a teacher holding a valid Missouri teaching certificate for the grade levels at which the course will be offered and that the teacher has academic preparation as determined by the department. (MO)

> To use distance learning ..... a school shall validate that the teachers are certified and appropriately endorsed and have background in distance learning. (MT)

Training and Staff Development

Instructional technology, especially computers and telecommunications, is still intimidating to many teachers. Not only is it difficult for many to begin to use such tools, but the problem is complicated when it appears that teacher replacement is possible through televised courses. Several states have established policies which require inservice and/or preservice instruction for any personnel, aides or teachers, involved in instructional settings. They show concern for the preparation of a television teacher in the use of the medium, and of an on-site monitor in classroom management. The familiarization of teachers in a receiving school with realistic expectations for the role of technology in instruction, and their role in the planning of instruction with technology, seems an important step in assuring successful use of a program and in reducing anxiety.

> The satellite classroom instructor shall receive inservice training pertaining to the course organization, classroom management, and technical aspects. (OK)

> The teacher will participate in instructional and technical inservice education developed and made available by the developer or sponsor of the approved course. (MO)

To use distance learning ..... a school shall verify that local facilitators (not necessarily certified) who assist students in receiving the instruction on-site have adequate preservice training and local supervision. (MT)

The district shall ..... whenever possible, work closely with business and government to keep informed of the latest technology. (MT)

Each school district with an approved technology utilization plan, ... may apply for state aid to provide inservice training for elementary and secondary public school staff on the use of technology in education. The inservice training should not be limited to formal classroom presentations. (MN)

By June 30, 1985, the department shall provide for supplemental regional or statewide inservice training for district staff on the use of technology in education. (MN)

Course and Teacher Evaluation

Most state education agencies have a responsibility for the quality of instruction or instructional materials used in schools in their states. Two types of rules have been proposed in relation to teacher and course quality. One relates to showing evidence of effectiveness of courses or computer programs prior to use in the state. The second is a

requirement that a district establish a system to assess the effectiveness of a distance education course during its use.

> To use distance learning ..... a school shall validate the previous effective use of the course and instructor. (MT)

> To use distance learning ..... a school shall show how the effectiveness of the course, teacher and facilitator will be assessed and recorded. (MT)

> Each application ..... permits the department to determine that the district will continuously monitor and evaluate the effectiveness of the course. (MO)

Instructional Logistics

This category may appear to be one of primary concern and responsibility of a school district rather than a state, but some states place restrictions on districts in very specific ways. One major issue in this category is class size. In one of the examples, not only is the standing rule on class size in standard classes extended to distance learning classes at a receiving site, but is further extended to the total number of students enrolled at all sites during that time period. Apparently, this means that a school in that state cannot use a satellite-delivered course from a producer of a course that has 600 students nation-wide. While this may seem overly restrictive, it does indicate the belief that class size and the level of interaction between student and teacher is important in instructional effectiveness.

A second major issue raised in this category is the degree of freedom a local school or district has in its use of live broadcast television course sessions. In two examples, districts are directed to use live sessions even if it means altering the class schedule. This can be very difficult if transmissions cross time zones, and also if the school is so small that each course is offered only one period each day and a student with already limited options is forced to choose or perhaps forced to take a required course if the nonrequired one is offered at the same time.

There are certainly opportunities, in those states where district plans are required, for state agencies to give guidance in reaction to the plans. Perhaps it should not be addressed in policy, or perhaps we do not know the "best" way. Certainly, the notion of "best" is tied to whether changing the system or maintaining the system is the desired direction. A set of diverse approaches to this issue is displayed below.

> The LEA is responsible for establishing specific uniform procedures for evaluating student progress and administering a final grade. (OK)
>
> Since the teacher at the sending site interacts with, evaluates, and remediates students, the maximum class size shall not exceed 32 pupils per teacher. This may limit enrollment at a given receiving site and it may

also limit the number of receiving sites based on the total number of students that are enrolled per hour, per teacher. (ID)

Enrollment in satellite courses shall adhere to State Department of Education class size regulations. (OK)

The course being taught shall not deviate from the minimum time constraints and organizational requirements enumerated in the State Board of Education Rules and Regulations, especially Chapter E, Rule 12,2.c.ii. (ID)

To use distance learning ..... a school shall outline how the course instruction will be delivered and will meet learner goals. (MT)

Each participating school shall follow a live televised program schedule and course outline. This regulation will not exclude a school from taping and using sessions at a later date for review or make-up purposes. (OK)

The district will implement the course in the manner prescribed by the developer or sponsor, including scheduling classes as necessary to take advantage of live, interactive broadcasts and adjusting the beginning and ending dates of classes to participate in the full course. (MO)

> To use Distance Learning ..... a district shall show that the distance learning classroom environment meets health and safety standards and provides effective access of students to instruction. (MT)

Credit

Two examples in this section highlight the policy issue. The second is an enabling or encouraging policy which allows credit toward graduation for courses delivered through electronic media, and the first limits the allowable credit a student may gain in this manner to six semesters.

> Credit earned via distance learning is to be limited to 3 units or 6 semester credits for graduation purposes. (ID)

> Courses delivered primarily through electronic media may be offered by school districts and counted toward meeting the curriculum standards and state minimum graduation requirements if approved and implemented in accordance with this rule. (MO)

Content

Concern for the content of technology-based instruction is parallel to that for any instruction. States having mandated or recommended learning objectives in various subjects and levels seem to apply those to any type of course, no matter how delivered. The sample policies generally place the burden on the district to show compliance. However, in the Review section below, it should be noted that some approval processes

include a content review at the state level which may result in an "approved list" of distance courses. Also, states vary in their focus on outcomes vs. course content.

> Any course required for graduation shall contain all the critical components as outlined in the State Department of Education publication entitled "Secondary School Courses of Study." (ID)

> Satellite course content should correlate with the Oklahoma suggested learner outcomes approved by the state Board of Education. Exceptions may be made for advanced placement courses by the Accreditation Section. (OK)

> Each application ..... must show that the course ..... has been developed on the basis of clearly stated learner outcomes or objectives; is logically organized and developmentally suitable for the grade level at which it is intended to be used; has been reviewed by subject matter experts for content validity and objectiveness of presentation; ..... (MO)

> A school shall demonstrate how the course meets learner goals, documents that the course is an integral part of the curriculum, ... (MT)

Instructional Materials

As with the content category, the issue here is handled in a fashion parallel to other instructional material policies. However, in one example, the inclusion of supplementary

materials with satellite courses appears to be mandated. This is an indicator of an issue not always addressed either by policymakers or school personnel, that in designing the instructional setting for distance education, there are several components for which to plan in addition to merely receiving the video broadcast.

> Satellite courses offered for high school credit shall utilize textbooks selected from the Oklahoma approved list of textbooks. Exceptions will be made for advanced placement courses by the Accreditation Section. (OK)

> Supplementary materials, including specifically designed software and/or printed matter, shall be provided in the satellite course curriculum to be used for review, drill, practice and/or homework. (OK)

> Each application ..... must show that the course includes teaching strategies and resource materials which are educationally sound, address a variety of learning modalities, and are consistent with the learning styles of the age groups for which intended; ..... (MO)

> The School District shall use its best efforts to provide access to current materials and resources in all program areas and at all levels, ... (MT)

Review and Approval

Many of the states in the sample indicate a requirement that school districts apply to the SEA for permission to use

distance learning programs. Not all, however, define the term, so that it is not clear whether correspondence courses are included, or the policy just applies to electronically delivered courses. Also, through telecommunications many opportunities are available for supplementing standard instruction, such as telephone interviews with prominent experts, two-way discussions between groups of students, and special television broadcasts. It is not clear in some cases whether applications are required for these supplementary activities.

A second major aspect of policy in this category is the review and approval of courses or programs by the state independent of any district usage. Such policies are somewhat like textbook approval, in that they result in approved purchase or usage lists for video programs.

> Any elective course must be reviewed and approved by the SDE, Bureau of Instruction. (ID)

> Satellite programs offered for instructional purposes and/or high school credit shall be approved by and under the supervision of the State Department of Education. To offer satellite courses for high school credit, a Satellite Instruction Application Form shall be submitted and approved by the State Department of Education. (OK)

The Department of Elementary and Secondary Education will accept applications for approval of electronically delivered courses submitted by school districts, developers of courses and sponsors of courses. Each application must be submitted by dates and on forms specified by the department. Each application for approval must show that the course meets the following criteria: (list). (MO)

The department will empanel a committee of curriculum specialists and teachers to review the course, judge it against the criteria in section (2), and make a recommendation to the department. The department will notify the applicant and all public schools of its decision. (MO)

Any school district may apply for permission to use an approved course by submitting an application in a form and by a date specified by the Department annually. (MO)

Department staff members will review all applications, give applicant school districts an opportunity to correct any deficiencies and notify the districts of approval or disapproval to use the course. (MO)

To use distance learning programs local school districts shall apply for an alternative to the standard by: a) Demonstrating in writing a need for the course; (rest of list embedded in above categories). (MT)

B. Implications of Existing Policies

The Policy Stances Regarding Distance Education

It is clear that educational technology has captured the interest of state policymakers. Our review of policies indicates that the states are interested, enthused and sometimes bemused. This interest is manifested in different ways in different states.

Some say, "Yes, technology has great potential. We want you to experiment with it, and we'll issue waivers to help you experiment." Other states say, "We think technology can solve some critical problems of access and quality. But be careful; think through the implications carefully; develop a plan which relates your use of technology with your ongoing educational program." A third group of states says, "We think technology has strong potential. But any uses must meet all of our current requirements for time, content, certification, etc."

In all cases, the states appear a bit guarded in setting firm long-range directions for uses of technology. And well they should. Many issues of effectiveness and cost remain unresolved. The state policies reflect a caution about the extent to which certain technologies will bump up against current state-wide structural requirements. This caution is certainly understandable. State policy in education is always a negotiative process. Requirements for curriculum, certification, credit, etc. have been negotiated in emotion-charged environments--often over a long period of

time. Having successfully made their way through this very complex process of negotiations, many states are loath to now automatically drop the requirements in favor of relatively untested technologies.

There appear to be quite different stances toward computer technology vs. distance learning technology. The policies regarding uses of computers in the schools reflect an assumption that computers are tools which fit easily into the way schools are currently structured. On the other hand, the policies related to uses of distance learning--especially instructional television--reflect the many cautions and worries described above.

Areas Not Yet Addressed Via State Policy

In a previous section we reviewed the broad array of categories where we have found state policies related to technology and distance education. As mentioned above, these reflect certain reservations and restrictions related to the extent to which current state requirements might be violated by new uses of educational technology. It appears that a reverse question is only beginning to be addressed. That question might be phrased, "To what extent do current state requirements inhibit necessary experimentation with educational uses of technology?" When phrased this way, other categories begin to emerge. For example, the issue of the potential conflict between state funding formulae and use of technology has not received much attention as yet. Formulae

driven by student counts or "unit" counts or teacher counts may provide disincentives for experimentation. Section III provides further discussion of this issue.

Another area where current requirements may inhibit experimentation is the potential clash between technology-enhanced programs which demonstrate superior outcomes, but which run up against "Carnegie unit" type requirements. If the state holds firm on contact hour approaches to school approval and graduation requirements, then technology enhancements which require different instructional time allotments may be impossible. Indeed, our sampler of state policies reflects a certain ambivalence between the "outcome" type requirements (e.g., "The school shall outline how the distance learning instruction will meet learner goals.") and the "input" type requirements (e.g., "x contact hours required for granting credit for graduation.") It may be that a middle ground will be the state definition of quality standards for effectiveness of educational technology. We have found few policies which provide this type of guidance, however.

Another issue which presents a state policy dilemma is that of supervision--instructional and otherwise--of students. Indeed, the issue of teacher certification appears to occupy much of the attention related to uses of technology, with many states holding firm on the requirement that the students be under the direct supervision of a certified teacher. Few states, however, have defined the particular kinds of

different instructional tasks that the certified teacher must perform under a distance learning situation or a computer enhanced course. It would appear that careful consideration of this issue may open the doors a bit further to experimentation--but experimentation after more detailed and careful consideration of the necessary instructional management which must occur at the local site.

In our search for state policies, we found few which addressed the issue of interagency coordination in using instructional technology. Our experience with several states would suggest that this is a critical area. Communications authorities, public utilities, and public broadcasting agencies are all heavily involved in any effective educational telecommunications system. Perhaps state policy related to these types of agencies is found in state statutes and rules outside the province of the SEA, but it would appear that the issue is one which requires further attention.

Finally, it appears to us that additional policy consideration of key instructional design questions might be necessary in the future. The use of technology in our schools requires a complex array of new and different interactions--teachers interacting with new techniques; students interacting with new forms of delivery of instruction; courseware interacting with hardware and hardware interacting with other hardware. These are raising major instructional design issues. Indeed, a major contribution technology might make in the future is a

reawakened concern with the question of qualitative standards for good instructional design. If state technology policy can help address this concern, all of education will be better served.

C. Evaluating Distance Learning Methods

As can be seen from some of the statements in part II, section A, evaluation in distance education is a concern of state policy. In some cases, the responsibility is placed in the local school district, and in others it is retained by the SEA. In any case, the quality and value of instructional material is of great interest to all decision makers at any level. Several facets of evaluating instruction in any mode were evident in the statements, including evaluation of the teacher, course design, instructional materials and student outcomes.

Although we obtained policy statements concerning the responsibility to evaluate, we did not obtain documents which specify the instruments, criteria or processes to be used except from Missouri. State policy there includes eight criteria for use in evaluating courses delivered primarily through electronic media. The application of the criteria is supported by a form providing from one to seven standards for each criterion, for a total of 32 items, each rated on a four-point scale. The eight criteria are:

1. The course has been developed on the basis of clearly stated learner outcomes or objectives.

2. The course is logically organized and developmentally suitable for the grade level(s) at which it is intended to be used.

3. The course includes teaching strategies and resource materials which are educationally sound, address a variety of learning modalities, and are consistent with the learning styles of the age groups for which intended.

4. The course includes both formative and summative tests which are closely aligned with stated learner outcomes or objectives and provides for frequent feedback to students.

5. The course has been reviewed by subject matter experts for content validity and objectiveness of presentation.

6. The course has been demonstrated to be effective in achieving stated learner outcomes.

7. The course includes instructional and technical inservice education for the local classroom teacher.

8. The course meets high standards of quality in production and presentation.

It is ridiculous to generalize from a single example, but it serves to generate some thoughts in regard to evaluation in distance education policy. First, it is laudable that a state has seen evaluation as important enough to spell out its meaning in policy, and others ought to consider it. Second, it strikes us that, with the possible exception of item 7, the criteria are no more than ought to be applied to any course whether delivered by distance methods or not. Holding distance education to the same standard is certainly important if it is to be accepted as legitimate for student credit. Are there aspects of distance education which differ in such a way that additional criteria are warranted? There is no evidence in policy documents to suggest them.

If course evaluation is required at the state or local level, the set of criteria from Missouri would be a good starting point. It appears to us, however, that the effects of other aspects of distance delivery such as the student environment and the various modes of student-teacher interaction in different systems also need to be addressed. We know of no guidelines which would support state or local educators in the process of deciding between two courses using different delivery systems. Likewise, no criteria are available to allow them to assess the relative value in student outcomes of live television versus video tape. The frequency of this type of question from local district educators suggests that such evaluations need to take place and may not be within their expertise or ability to pay. States could do the research, but perhaps it is a role for the federal government since the answers are useful in all the states.

III. Policy Challenges and Opportunities

A. Questions of Quality and Appropriate Use

As indicated in section I of this paper, a variety of technologies can be used to advantage in a distance education system. Developers of distance education courses and supplementary instruction are usually tied to a specific delivery system involving a primary communications mode such as television or electronic mail. Their course design is built on the characteristics of the primary medium. This raises a number of questions in the minds of educators at the district and state level when they are examining the various options for acquiring service.

> Are there instructional situations in which one mode is more useful or effective than another?
>
> Should a distance education design seek to imitate a regular classroom situation as closely as possible?
>
> Is a distance course suitable only for students who are demonstrably self-motivated and self-disclipined?
>
> Are there student characteristics such as learning style which make a student more suited to one mode than another?
>
> In what ways does the school organization need to change to accommodate distance education effectively?
>
> Should the use of distance education be restricted to certain subject areas?

All of the questions are important to policy decisions in some way. Since there are many questions which do not have an answer based in research and experience, policymakers must rely in large measure on professional judgment and logic. This presents some dilemmas.

One such question is about experimentation. Should policy encourage the use of a wide range of systems with students of a wide range of characteristics, or limit usage based on some assumptions about factors most likely to provide success? One approach is to open the door to local experimentation and the opportunity to use any option, but requiring an evaluation report of the experience. The resulting pool of information could then assist in future policy formation or modification. Another approach is to proactively fund experimentation and evaluation in local districts and provide the assistance of the state education agency or other entity to focus on questions in a specified research agenda.

Another dilemma related to the above is whether the state should assume responsibility for the evaluation and approval of distance courses and create an approved list, or require the local district to carry out the evaluation and present a rationale with its request for approval. The former approach is being recommended to the Oregon Legislature, and the second is being proposed to the Montana Board of Education. In either case, what criteria should be used to evaluate the courses?

B. Coordination and Institutional Relationships

Introduction

As the states begin to wrestle with coordination and institutional relationships, they will need to consider two factors. First, who are the critical participants in an

effective, coordinated state-wide network? And second, what should be the interrelationships of these participants in the various functions of an effective state-wide distance education program? We begin this section by addressing these two factors.

1. Key Players and Resources

State education agencies have a unique opportunity to coordinate previously disparate efforts among a wide variety of organizations. In states such as Hawaii, Maine and Minnesota we are beginning to see new relationships structured to foster advancements in distance education. Among the key participants in these innovative collaboratives are:

- the telecommunications technical "infrastructure" (those who provide the technical pathways which allow distance education to occur)
- public broadcasting corporations (who share technical resources, broadcast time scheduling, etc.)
- institutions of higher education (where, in many cases, there is the most extensive history of effective uses of distance learning as well as a research capability to advance the state-of-the-art)
- private industry (either as technical resources or co-participants as users of distance learning)
- other human service agencies (particularly health agencies, many of whom also have extensive experience in use of telecommunications strategies)
- certification and regional or state accrediting organizations (who can either open or close the doors to greater utilization of distance education)

- the governor's office and state legislature (who can help in establishing the state-wide vision and providing the state policy undergirding effective uses of distance education)

- local education agencies (the ultimate users who must be involved in planning distance learning applications)

- state-wide professional associations and/or unions (who usually have a partial mission of protection of a particular role, e.g., teaching, administration, school boards)

2. Key Distance Learning Functions

Obviously, each participating group plays a unique role in a coordinated state-wide distance education system. As states design their approaches, the key planning framework for deciding roles and responsibilities is formed by the major functions inherent in a distance learning program. These functions include:

- program and course development
- quality assurance
- delivery (teaching, broadcasting)
- evaluation
- identification of future technical and/or substantive needs

In the following section we use the above framework of participants and functions as a backdrop to review and discuss implications of various state policy approaches to distance education.

Policy Approach #1

The basic direction for this approach is one of encouraging experimentation and demonstration. Minnesota has perhaps the

longest experience with this policy approach. Their technology demonstration site program provided invaluable evaluative information to the State Department of Education. Joan Wallin, the Department's Supervisor of the Media and Technology Unit states, "We can endorse two-way interactive television as a method of delivering instruction based on the evaluator's report. Similar evaluation efforts that analyze satellite course effectiveness need to be done on the national level before further promotion of satellite instruction." (letter dated January 15, 1989 to Linda Roberts, OTA Project Director). Similar action research is now under way in Hawaii.

A basic policy position that seeks to add to our knowledge about effective uses of technology for distance learning offers some very attractive features. For example, it is often easier to get participation of various organizations and agencies if the purpose is clearly one of experimentation and generating new knowledge. Such a policy also allows a state to "buy time" by examining alternative uses of technology, as well as demonstrating such uses to potential local users as well as state policymakers and working out the necessary collaborative arrangements. Finally, it may be a more effective way to capture the attention of certification and accrediting agencies. It is often easier for such agencies to issue waivers to test innovations in a controlled setting than it is to drastically revamp their policies. In the process, the state has the opportunity to solicit the agency's cooperation as a partner in examining policy implications.

Difficult features of such a "research and development" policy perspective include the problem of moving from experimentation to policy revision. State as well as local education agencies often report such difficulty--even when positive evaluation results suggest such movement would be desirable. There is a danger of being trapped in a mode of perpetual pilot projects. The need to clearly identify decision criteria used in deciding when to move from experimentation to institutionalization is a major need that states will be required to address to avoid such a trap.

Another consideration in the "research and development" policy approach is the danger of exclusion of key decision makers of the various participant groups described above. Obviously, key decision makers' attention is more readily captured when they are asked to make major, and long-lasting, changes in how they do business. The research and development approach by its very nature offers less stimulus for capturing their attention. Still another danger is the tendency to exclude potential key participants in the ultimate coordinated state system. We have noted numerous experiments, for example, that exclude institutions of higher education even when such institutions often have the longest track record and capacity to deliver distance learning.

Policy Approach #2

This policy approach basically has the state taking a neutral position related to distance education. It neither encourages

nor discourages experimentation with various approaches. In this approach there is a tendency to require that any experiments meet current standards regarding teacher certification, credit requirements, etc. Waivers are only issued on an ad hoc, case-by-case basis.

This approach places most of the initiative on the local level to develop the necessary collaborative arrangements for experimentation. One positive feature of such an approach is that local innovation and creativity may flourish. But the very nature of distance learning requires new and different kinds of interagency cooperation. To place total responsibility on levels other than the state may make it difficult for such cooperation to occur. Further, local agencies may feel that they are taking a real gamble in designing a distance learning experiment which requires waivers of state requirements. Unless the decision criteria for waivers are explicit (and in the cases we have examined, they tend not to be), the local agency's investment of time and effort can be dashed by a simple failure to receive the necessary waivers. Such a situation truly requires risk taking on the part of the local participants.

Finally, we suspect that if this policy approach is occurring in the absence of any state-wide planning, the overall effect will inhibit rather than facilitate uses of distance education in the state.

Policy Approach #3

In this approach, the guiding philosophy is that of "hardware first." Although that label may be considered severe, it serves to indicate the concept that before the development or acquisition of distance learning courses is carried out, there needs to be a hardware infrastructure in place, at least a plan for delivery technology if not the delivery system itself. Implementation of this approach means that assumptions are made about the primary or dominant modes of delivery, unless the plan is designed to accommodate a wide variety of transmission modes.

There are a number of different reasons for taking this direction. One is that the design and installation of the system is identified as the first step in an overall plan for distance education. In that case, the hardware installation is in tune with the general goals and strategies, and there is a rationale for the choices of mode of transmission.

Another reason for this strategy is that the locus of funding and responsibility for telecommunications might be in a different agency from that for the support of curriculum development. An advantage of this situation is that the delivery system is perhaps paid for out of funds not seen as part of the education budget. A problem is that there could be a lack of compatibility between what schools want to accomplish and what the system can handle.

A third rationale is that the state government may hold the view that a comprehensive telecommunications system is a basic need and service of the state for all its divisions and constituents, so it develops a design to support social service, police and other agencies in addition to all levels of education. This has the same implications as the previous strategy.

The hardware first concept is not inherently incorrect. It may in fact be necessary, given the structure and philosophy of a state government. However, it does place a great responsibility on the state education agency for intense involvement in interagency coordination, collaboration and planning in order to achieve educational benefits. This approach may help carry the cost of distance education by removing the system cost from the SEA budget, or at least sharing it with other agencies. However, it does not address the cost of the development of content and materials, teacher training or other components, and it does not deal with problem areas previously mentioned such as certification.

Two states which exemplify this approach are South Carolina and Oregon. In South Carolina, a state-wide television network is being installed using ITFS technology. Every school district will have access. The design of such a system will allow the state to provide either internally developed instructional material or instruction originating from outside the state. Although responsibility for the system is in

another department, the SEA has responsibility for all other aspects of distance education including certification, so its coordination task is not as complicated.

The initiative in Oregon for the development of a state-wide telecommunications system came from a joint interest of higher education and the electronics industry. Their proposals resulted in a state task force charged to conduct a needs assessment and develop a plan. The result is a system design using a variety of transmission technologies, with the vision of participation of school districts, higher education, and a variety of public and private agencies. The Oregon Department of Education is moving simultaneously to address issues of review of educational programming and certification, although the latter is under control of another agency. No efforts are evident of an initiative from any agency for the development or funding of educational programming for the system. The legislature is considering the network proposal in the current session.

C. Funding Formulae and Their Impact

Our analysis has revealed only one state, Texas, making adaptations of basic school funding forumulae to meet unique needs of distance education. (Texas' State Board of Education has recommended a Technology Equipment Allocation of $50.00 per Average Daily Attendance (ADA) per year). Our comments in this section are, therefore, largely speculative.

As we examine state school finance formulae, we are immediately struck with an apparent conflict between distance education arrangements and these formulae. Most formulae are based on enrollment or attendance of students. But what is the appropriate approach for supporting costs when the students are spread across a number of districts? If the traditional forumlae are applied to a rural district seeking to provide a course in Japanese via TI-IN to five of its students, it is highly possible that the necessary costs may not be fully recovered.

Goldstein (1984, pages 9-10) reminds us that the issue of the relative cost of instruction is much more complex in a distance education effort. He points out the irrelevance of standard pupil/teacher ratios when the master teacher may be delivering the instrucion to a number of districts who, in turn, are using aides as local site coordinators. Clearly, this is a significantly different mix of cost elements.

In our conversations with state personnel we have not discovered a major concern with this issue. It is likely that such mechanisms as "user fees" and categorical funding to support local experiments and demonstrations are seen as adequate to support the current level of experimentation. But in order to move from experimentation to institutionalization of distance learning, a re-examination of these traditional formulae will become increasingly important. The potential

impact is as great for "providers" as it is for receiving districts. For if funding for distance learning becomes part of a base formula, then will the demand to control all beneficiaries (including the providers) become even greater? This issue clearly deserves further policy analysis.

D. Policies as Disincentives to Distance Learning

Governing agencies have always been faced with the problems of setting policy: establishing a need, implementing, enforcing, and assessing the impact. Agency staff are faced with the tensions of change versus the status quo, and of conflicts engendered by having simultaneous roles of encouragement and enforcement. Teachers and other school district personnel are also affected by tensions and conflicts resulting in part from the nature of policy and its implementation. For the local educator, policy can provide incentives or disincentives for the use of distance education in meeting student needs.

It is tempting to be an advocate through policy. Many educators see opportunities in distance education as providing more choices and a richer learning environment for students. Some see possibilities for reorganizing the way school is conducted through greater individualization of instruction or the use of aides as facilitators or other ideas. Others, however, see the actual need to do some of those things in order to use a distance course, and find them to be an imposition on staff and schedule. Policies which create

opportunity for some are seen as threats by others. Still, it is possible to create policy which avoids disincentives without mandating great change. It is also possible to channel the direction of distance education by establishing a combination of incentives and disincentives.

The Minnesota approach provides an example of the channeling effect. Through legislation and SEA action, cooperative groups of districts and communities have been formed to establish the telecommunications systems and provide the instruction. State funding was part of the incentive. At the same time, certification and other regulations are maintained, creating some barriers to importing instruction from outside the state. Hence, one can expect that the result will be the increased use of locally developed instruction transmitted over local networks. Although this approach may limit the range of choices, it has advantages in that it encourages active involvement of teachers and administrators in the whole implementation process, and discourages a passive acceptance of an outside source. The policy is encouraging in a framework which enhances the concept of local control.

In Montana, the development of distance education policy is still in process. The process has been lengthened because of this very issue. The state will probably encourage the use of a wide variety of options, although it does not appear that substantial state funding will be forthcoming as an incentive. The feeling in favor of local control is strong in

Montana, so the emerging policy supports it. The need for increased student opportunity in the many small rural schools in the state argues for at least minimizing the disincentives to using distance education. The crux of the issue is the wording of the policies on the certification of the person who supervises the receiving site (facilitator) and the teacher of the distance course who may be from outside the state. Current policy is that both must be certified in Montana, although the facilitator is not required to be certified in the subject. Policy developers wonder if allowing a trained aide as facilitator, which would certainly remove a disincentive, would result in reduced learning or other problems. They also wonder if they should allow the use of a language course taught by a university professor even though that teacher is not certified in the state, and whether a rule thus set leaves them open to abuses of the policy.

Policies exist in many states with regard to the maximum number of units or credits earned through correspondence courses which may be counted in the total for graduation. In some cases, they are being applied to other distance education options, and in others (Nebraska, for example) special parallel rules are set up for technology-based options. At first look, limits may be seen as a disincentive. After all, if a suitable scheme for evaluating distance courses is established, and there is sufficient confidence in student learning to justify awarding credit, why set any limit? The

rationale is not presented in any of the documents we have seen. However, there seems to be no great outcry concerning these limits thus far, and there is no guidance to be found in research for either keeping or relaxing such limits.

It is clear that a state can provide incentives through monetary support, teacher training programs, technical assistance and the provision of educational programming and telecommunications systems. It can also remove disincentives through the relaxation of rules on class size, teacher certification, course approval and other factors. What combination of such policy components can encourage use and still maintain adequate standards is a question in every state, and the answer will vary. There is insufficient research on the effect of many of those moves on student outcomes to support state personnel in their decisions.

IV. Implications for Federal Policy

A. Policy Options and the National Interest

The federal role in education has varied widely over the years, depending upon the philosophies of education and of the government holding sway at a given time. However, some types of activities and methods have been employed consistently by federal education agencies whatever the changes in guiding philosophies have been. Although the relative emphases may change, the methods endure as logical federal roles, and can be considered for use in addressing any new issues or problems of national concern in education. Prominent among these activities are research, development, dissemination, coordination, advocacy and legislation.

Both technology and distance education have been of interest, and sometimes of concern, to educators at state and federal levels for many years. Through various funding mechanisms such as Title III ESEA and discretionary funds, and through initiatives in particular areas such as Special Education, the Education Department has supported research, development and dissemination in various technologies, especially computers and television. Many state education agencies have established correspondence courses or offices to facilitate correspondence course offerings and credit to students. In a sense, one can say that government support has already been addressed to many of the components of distance education. However, the modern view of distance education is quite

different from that of 15 or 20 years ago, primarily because of the new opportunities provided by advances in telecommunications and computers through microelectronics.

Although the general definition of distance education is still much the same, referring primarily to a separation of student and teacher, the modern view assumes that some technology is employed. In fact, our contacts with educators suggest that for many people who have recently become aware of the concept, television is the assumed mode of delivery. However, a broad look at the distance education projects now active in the U.S. and other countries reveals various combinations of correspondence--radio, electronic mail, computers and television, and various modes of video signal distribution such as cable, ITFS, satellite, broadcast and narrowcast. In addition, practitioners are coming to view the integration of these technologies in an overall design of an effective instructional setting as a paramount consideration.

For federal agencies then, there are still roles to be played, not just in the exploration of individual technologies but also in the broader consideration of the selection and integration of technologies to achieve effective instruction, particularly when the student and the primary source of instruction are separated by distance, time or a combination of factors. The effective use of distance education can help the nation address the problems it faces of education and training in elementary, secondary and adult levels where

rurality, job necessity or other factors separate learners from educational opportunity. The traditional roles of federal education agencies will still be useful in dealing with these new opportunities, because there are aspects with which individual states cannot deal and because some of the problems transcend state or regional borders.

We will first identify some major areas of national concern, and then proceed to recommend some major roles and activities through which the federal government could influence and support the use of distance education.

1. Areas of National Concern

There are a number of issue areas in distance education in which the federal government has a legitimate interest and role. In some of these, states share a responsibility, but need the involvement and support of an outside entity which has broader responsibility, or which is in a better position to bring about cooperative activities involving many states. In addition, the federal government can marshall resources from a broader base of contribution to address problems or issues which are common to all states, or which require more resources than a single state can afford.

(a) Certification

A problem area identified by many people who are charged with a regional or national view is that of the certification of teachers who are the primary

presenters of courses delivered through distance technologies, sometimes called distance teachers. It is a problem area because receiving schools view the person as the teacher of a course in much the same way as they view a teacher in the classroom. The person is the primary source of subject expertise and instructional approach. The state agencies responsible for certifying regular teachers therefore typically apply the same rules to the distance teacher. From the state standpoint, this is entirely logical and proper. They point out that in many cases, reciprocity with other states for acceptance of certificates has been established. For the producing organizations however, there are two problems. One is that they are being required to go through the certification process in each state they serve and for each distance teacher who is teaching a course in that state, even though the teacher is certified in the state of origin. For TI-IN, one of the prominent producers of televised and satellite delivered courses, this has meant certifying from six to 10 teachers in each of 28 different states thus far. The second problem is that in a number of cases, the certification requirements include items for which there is a state rationale but which seem irrelevant from a national standpoint. For example, physical examinations have been required, and courses

in the state history are sometimes required. In one case, a naturalized citizen teaching her native language was not qualified because she had not taken a course in the cultural setting of the language.

In a related problem, there is a question in some forms of distance courses of the identity of the teacher. This is particularly a question in courses which are not live and interactive, but are based on videotape productions which are not just a picture of a teacher talking. The course "French in Action" developed by the Annenberg/CPB project is a case in point. If a school wishes to base a course on that material, who is to be the teacher? If a teacher is appointed the local supervisor but the primary delivery of content is from the television program, who is to be certified?

(b) Equity and Access

Issues in this category are traditionally a national concern. There are several aspects to consider.

One of these is the need to ensure access to available courses or other instructional offerings to every state. This involves not only dealing with the certification problem outlined above, but also with any concerns of the FCC or Interstate Commerce. As it is within states, the federal concern may involve departments which are responsible for the

technologies in question, in addition to the Education Department. A second concern in this category is that of the volume and breadth of subject coverage of the available distance learning material, whether in full courses or supplementary material. The initial interest and development effort, particularly in televised courses, has been in foreign languages and mathematics. Distance education techniques are not designed with any subject in mind. Perhaps the needs in many districts are focused on those two, but there are many other subjects which small rural schools, for example, find it difficult to support. In the EDUNET Project in Montana, a nontelevision delivery system, drafting and electronics are offered in several districts. It is not proven that only bright, self-motivated students can benefit from distance education, but there is not yet a rich store of courses and supplementary instruction available nationally which addresses a wide range of subjects, ability levels and age levels.

Some federal agencies address the needs of minority groups in the population. In the case of distance education, designing instruction to address particular needs has not been a high priority, although a requirement for serving Chapter I students was included in the recent Star Schools grants. Indeed,

the factors to consider in a design which would meet those needs may not be well-known.

(c) General information resources

There is no central agency where school district personnel can easily find information on research findings, implementation guidelines, available options for courses, and other information needed to make decisions about the use of distance education. This lack of aggregation is a problem which affects all the states and their school districts.

(d) Staff Development

If distance education is to become a readily useful tool across the nation, it is teachers and curriculum workers who will carry the burden of integrating the tool in the instructional process in a school. There is a growing body of experience and knowledge about what works and what doesn't work. There are few opportunities for the professional staff members to gain that knowledge. The Education Department and NSF have in the past addressed such national needs to bring teachers up to date about the appropriate and effective use of new technologies and techniques.

2. Roles and Activities

It is clear that, across the country, the vast majority of states are in the very early stages of dealing with

distance education policy. In most cases, such initial efforts are happening in a context with little research knowledge regarding the future potential of distance education technology. We would encourage the federal government to consider this phenomenon as the guiding feature for considering its appropriate role. This role may be a combination of the following three functions:

"Preacher"--clarifying the potential of distance education and advocating experimentation--particularly in advancing the cause of equity and access to quality instruction.

"Prodder"--stimulating state action by proactively supporting the convening of state policymakers and local users to consider key policy issues identified in this paper. In our view, this would require a conscious decision at the federal level to place distance education higher on its priority list.

"Partner"--Actively supporting the necessary research and development to continue to add to our knowledge base about effective distance learning strategies and practices.

B. Dealing with Cross-Border Issues

The states have historically been assigned the role of quality assurance over curriculum content, teacher certification, and school accreditation. Modern distance learning technology now has the potential of straining this arrangement. The minute

we begin to consider telecommunications technology we must examine the federal role. As Michael Goldstein puts it,

> "The fact that telecommunications is under pervasive federal jurisdiction and education similarly under the control of the states creates a conflict between the two in the context of the regulation of telecommunications-based distance learning. The question comes down to who has the power to regulate a telecommunications-based distance learning service that originates outside of the boundaries of a political jurisdiction. Can Iowa control instructional television signals that are streaming across its border from Illinois?" (Goldstein, 1984, p. 20).

If we regard telecommunications-based distance learning as "interstate commerce," then clearly the Commerce Clause of the United States Constitution assigns responsibility of regulation to the federal government. Goldstein points out that the Supreme Court has given the broadest possible definition to the term, "commerce." (p. 23) Two precedents directly relevant to distance learning should be examined. First, International Textbook Co. v. Pigg found that state regulations restricting such interstate aspects of a correspondence school program as forwarding books and papers to students, employing agents to solicit and accept student applications, etc. were entitled to protection against undue state regulation. Another case, Nova University v. Board of Governors of the University of North Carolina, found that the State of North Carolina did not have the right to control Florida-based Nova University's right to teach within the

state. These precedents bear close examination as we consider the federal/state division of responsibilities in this area. This is particularly true in light of the kinds of state regulations being adopted which restrict uses of distance learning programs originating in other states.

Other aspects of federal control beyond interstate commerce also deserve attention. For example, the equal access provisions of PL 94-142, the Civil Rights Act and Section 504 of the Rehabilitation Act prompt questions about equity of access to distance learning opportunities within a state. As states extend their experimentation with distance learning, these federal requirements are likely to come more to the fore.

C. Government as Convener

Resolving the issues described in this paper can be greatly enhanced by convening policymakers across state lines. Given the rapid development of distance learning policies and the great ferment that appears to be developing around such policies, the timing for federal support of a convening of policymakers could not be better. While the government faces constraints in directly playing this convening role, we would encourage consideration of support for intermediary, "neutral" organizations such as regional educational laboratories to convene state and federal policy representatives to consider different policy approaches and cross state needs for cooperation and coordination. Currently funded efforts such

as the Star Schools projects do not provide opportunities for such cooperation on policy consideration. Without such deliberations, key policymakers may feel bypassed and may close rather than open doors to expanded demonstrations of the potential.

The federal government's convenor role can also be useful in disseminating the results of research and development regarding distance learning strategies. Our review of state policies and plans reveals an exciting amount of experimentation with distance learning approaches. However, we find very little attention to disseminating the results of such efforts across state lines. The federal government has played an historic role in disseminating information about promising practices across the country. Convening practitioners and policymakers across state lines and engaging them in face-to-face discussion about "what works" can foster greater and more efficient expansion of distance learning practices.

D. Research, Development and Evaluation

There is much yet to be learned about which distance learning strategies work best under which conditions and contexts. Again, the federal government can play an essential role in expanding our knowledge base about effectiveness. Several areas deserve particular attention in such research and development.

The "value added" question is one priority concern for which we have few answers. Research efforts which attempt to discover the value added to instruction by different forms of distance learning are currently lacking. For example, what is the additional value of two-way video over two-way audio?, over one-way video? We tend to assume that the more costly uses are the most effective instructionally, but we have very little evidence from controlled research regarding this question.

A second set of critical research questions centers on the appropriateness of different distance learning modes for a variety of target audiences. The current Star Schools projects have potential for expanding our knowledge about effectiveness in working with underperforming youngsters. Yet without controlled research efforts, we may miss this opportunity. We do know that distance learning has been most effective with persons who are capable independent learners. But what are the effects when we work with the more dependent underperformers? Is the need for increased local supervision and assistance for less independent students worth the extra cost in order to achieve those effects?

Still another priority research area is the role of the local site coordinator. As we have discussed in other sections of this paper, states are exerting various controls over the adult in charge of the students at the receiving classroom, but little attention has been given to the optimum set of

instructional support strategies which the local coordinator needs to carry out to foster student learning.

There is a major development need related to high-quality courseware. There exists a good knowledge base about high-quality instructional design. Yet these principles are often violated in the face of limited resources, tight timelines for delivery, etc. In virtually every state we have reviewed, and in the ones with which we have worked in the Northwest and Pacific, the lack of high-quality instructional courseware is a major need. Without such development, educators once again face the danger of the technology outstripping their ability to make effective instructional uses of it.

Finally, we have discovered a major need for additional work on evaluation design and methodology. Assessing the effects of the new mixes of (a) technology, with (b) conventional instructional materials, and (c) changing roles for the local site teacher or facilitator demands fresh thinking and new designs. We suspect that traditional forms of process or product evaluation will not be sensitive enough to the unique distance learning context. The federal government can make a major contribution through supporting collaboration among state and local experimenters and evaluation specialists.

The federal government should increase its support for such priority research, development and evaluation issues if we are to enhance the potential of distance learning. With the

current level of exciting experimentation in many states, the research and development needs to be field-based and "action"-oriented, rather than the traditional forms of isolated research on these topics. Collaborative research and development between practitioners, state policymakers and R&D organizations can dramatically elevate the state-of-the-art.

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